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To:	**Company:**	**Facsimile No:**	**Telephone No:**
Examiner Mark Milia	U.S. Patent and Trademark Office	571-273-8300	

From:	Ramyar M. Farid	*Direct Phone:*	202.756.8146
E-Mail:	rfarid@mwe.com	*Direct Fax:*	202.756.8087
Sent By:	Matilda Mason	*Direct Phone:*	202-756-8661
Client/Matter/Tkpr:	50099-175	*Original to Follow by Mail:*	No
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Re: **Application No.:** **09/939,626**
Attorney Docket No.: 50099-175

Message:

This Appeal Brief ($500) is being filed in support of the Notice of Appeal filed January 5, 2006.

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Docket No.: 050099-0175 PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of	:	Customer Number: 20277
Eiichi TAMAKI, et al.	:	Confirmation Number: 4531
Application No.: 09/939,626	:	Tech Center Art Unit: 2622
Filed: August 28, 2001	:	Examiner: Mark R. Milia
For: IMAGE RECORDER	:	

TRANSMITTAL OF APPEAL BRIEF

Mail Stop Appeal Brief
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Submitted herewith is Appellant's Appeal Brief in support of the Notice of Appeal filed January 5, 2006. Please charge the Appeal Brief fee of $500.00 to Deposit Account 500417.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due under 37 C.F.R. 1.17 and 41.20, and in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,
McDERMOTT WILL & EMERY LLP

Ramyar M. Farid
Registration No. 46,692
Please recognize our Customer No. 20277 as our correspondence address.

600 13th Street, N.W.
Washington, DC 20005-3096
Phone: 202.756.8000 RMF:MWE
Facsimile: 202.756.8087
Date: March 6, 2006

Application No.:

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PATENT

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APPEAL BRIEF

Mail Stop Appeal Brief
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Appeal Brief is submitted in support of the Notice of Appeal filed January 5, 2006, wherein Appellant appeals from the Primary Examiner's rejection of claims 1-9.

Real Party In Interest

This application is assigned to Dainippon Screen Mfg. Co., Ltd. by assignment recorded on August 28, 2001, at Reel 012130, Frame 0581.

Related Appeals and Interferences

To the best of Applicants' and Applicants representatives' knowledge, there are no related appeals or interferences.

Status of Claims

Claims 1-9 are pending and stand finally rejected.

Status of Amendments

No After-Final amendments were made to the claims.

Summary of Claimed Subject Matter

Independent claim 1 is directed to an image recorder. The image recorder can optically scan an image recording medium in a main scanning direction and a subscanning direction for recording an image on the image recording medium. The image recorder includes a light source emitting a first light beam; a spatial light modulator dividing the first light beam into a plurality of second light beams arranged at least in the subscanning direction while modulating the plurality of second light beams in response to image signals; a focusing optical system for focusing the plurality of second light beams on a recording medium; and a main scanning system for scanning the recording medium with the plurality of second light beams in the main scanning direction.

The plurality of second light beams constitute a plurality of beam subsets, each beam subset consists of N adjacent light beams in the subscanning direction, where the number N is an integer of at least two, and the plurality of light beams belonging to each beam subset are synchronously modulated by a single image signal for a single pixel so that each pixel on the recording medium is recorded by a single beam subset, whereby power density for recording each pixel is increased in response to the square of the number N.

Independent claim 6 is also directed to an image recorder. The image recorder can optically scan an image recording medium in a main scanning direction and a subscanning direction for recording an image on the image recording medium. The image recorder includes a light source emitting a plurality of modulated light beams from a plurality of light emitting devices arranged in the subscanning direction; a focusing optical system focusing the plurality of light beams on a recording medium; and a main scanning system for scanning the recording medium with the plurality of light beams in the main scanning direction.

The plurality of light beams constitute a plurality of beam subsets, each beam subset consists of N adjacent light beams in the subscanning direction, where the number N is an integer of at least two, and the plurality of light beams belonging to each beam subset are synchronously modulated by a single image signal for a single pixel so that each pixel on the recording medium is recorded by a single beam subset, whereby power density for recording each pixel is increased in response to the square of the number N.

Independent claim 9 is directed to an image recorder for recording an image on an image recording medium. The image recorder including a photo-generator generating a beam subset composed of a plurality of light beams subjected to a same modulation; a focusing optical system focusing the beam subset on the image recording medium; and a scanning mechanism scanning the image recording medium with the light beam set. The beam subset consists of the adjacent light beams, whereby the beam subset is used to image a single pixel on the image recording medium.

Grounds of Rejection To Be Reviewed By Appeal

For the convenience of the Honorable Board of Patent Appeals and Interferences (the "Board"), Appellants do not separately argue the patentability of claims 2-5, 7 and 8.

Accordingly, review of the rejection against independent claims 1, 6 and 9 under 35 U.S.C. § 103 as being unpatentable over Imakawa in view of Venkateswar et al. is respectfully requested. Claims 2-5, 7 and 8 stand or fall with independent claims 1 and 6, respectively.

Argument

Each of claims 1 and 6 recites in pertinent part, "said plurality of light beams belonging to each said beam subset are synchronously modulated by a ***single*** image signal for a single pixel so that each pixel on said recording medium is recorded by a single beam subset;" and claim 9 recites in pertinent part, "a photo-generator generating a beam subset composed of a plurality of light beams subjected to ***a same modulation***; ... said beam subset is used to image a single pixel on said image recording medium." Support for the aforementioned features can be found, for example, on page 10, lines 7-18 of Applicants' specification. In contrast, both Imakawa and Venkateswar et al. disclose a plurality of pixels being modulated by ***different*** image signals from one another. Indeed, the Examiner admits that Imakawa does not disclose light beams being synchronously modulated by a ***single*** image signal (nor light beams subjected to a ***same modulation***) in the manner recited in the pending claims. The Examiner therefore relies on Venkateswar et al. to obviate these deficiencies of Imakawa.

Specifically, the Examiner relies on col. 4, lines 41-59 of Venkateswar et al. as allegedly disclosing a "light beam subset is used to image a single pixel" (*see* page 3, last line – page 4, line 2 of outstanding Office Action). However, the Examiner does not identify any portion of Venkateswar et al. which allegedly suggests that the light beams of a given subset "are ***synchronously*** modulated by a

single image signal" or "subjected to a ***same*** modulation." Indeed, it appears that Imakawa and Venkateswar et al. are silent as to the aforementioned feature of the present invention in relation to the ***modulation*** of the referenced light beams, and are both directed to record each pixel by a set composed of a plurality of small pixels to thereby achieve an improved resolution.

On the other hand, according to one aspect of the present invention, an improved power density of light beams on a photosensitive material can be achieved. As described in page 1, line 25 - page 2, line 6 of Applicants' specification, in the case of recording an image on a photosensitive material using a conventional image recorder provided with a spatial light modulator, the power of an original light beam is divided into a number of elements so that the power of the light beam applied to each pixel is disadvantageously reduced (similar to Venkateswar et al.). To solve this problem according to one aspect of the present invention, a plurality of light beams can be obtained by dividing an original light beam (first light beam) by the spatial light modulator into subsets each of which consists of N adjacent light beams, whereby the N adjacent light beams can be modulated synchronously for each subset by a ***single image signal***. Therefore, as shown, e.g., in Figs. 8 and 9 of Applicants' drawings, a plurality of adjacent small pixels modulated by a single image signal can form one pixel on a photosensitive material. Each of the N adjacent light beams can be narrowed and projected on a photosensitive material by a focusing optical system. Accordingly, the power density of the light beam is the square of N in each pixel recorded by a subset of N adjacent light beams. As a result, an insufficient exposure of the photosensitive material can be efficiently prevented and a sharp image can be recorded.

In contrast, Imakawa and Ventkateswar et al. merely attempt to improve the resolution depending on the size of the small pixels, but do not disclose or suggest means by which the power density of each pixel can be improved. Whereas, an improvement in power density of each pixel can be obtained by one exemplary embodiment of the present invention by, for example, synchronously

modulating a plurality of adjacent light beams by a single image signal, and applying the light beams onto a photosensitive material through a focusing optical system to bring adjacent small pixels in each subset into the same condition, namely, "all exposed" or "all unexposed." Such differences between the present invention and Imakawa and Venkateswar et al. are schematically shown in the attached reference drawing (Fig. A).

The Examiner is directed to MPEP § 2143.03 under the section entitled "All Claim Limitations Must Be Taught or Suggested", which sets forth the applicable standard for establishing obviousness under § 103:

> To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. (citing *In re Royka*, 180 USPQ 580 (CCPA 1974)).

In the instant case, the pending rejections do not "establish *prima facie* obviousness of [the] claimed invention" as recited in the independent claims because the proposed combinations fail the "all the claim limitations" standard required under § 103.

Conclusion

For all of the foregoing reason, Appellant respectfully submits that the grounds of rejection of the claims on appeal is in error and should be reversed.

Respectfully submitted,
McDERMOTT WILL & EMERY LLP

Ramyar M. Farid
Registration No. 46,692

600 13th Street, N.W.
Washington, DC 20005-3096
Phone: 202.756.8000 RMF:MWE
Facsimile: 202.756.8087
Date: March 6, 2006

Please recognize our Customer No. 20277 as our correspondence address.

CLAIMS APPENDIX

1. An image recorder optically scanning an image recording medium in a main scanning direction and a subscanning direction for recording an image on said image recording medium, comprising:

a light source emitting a first light beam;

a spatial light modulator dividing said first light beam into a plurality of second light beams arranged at least in said subscanning direction while modulating said plurality of second light beams in response to image signals;

a focusing optical system for focusing said plurality of second light beams on a recording medium; and

a main scanning system for scanning said recording medium with said plurality of second light beams in said main scanning direction, wherein

said plurality of second light beams constitute a plurality of beam subsets,

each beam subset consists of N adjacent light beams in said subscanning direction, where the number N is an integer of at least two, and

said plurality of light beams belonging to each said beam subset are synchronously modulated by a single image signal for a single pixel so that each pixel on said recording medium is recorded by a single beam subset,

whereby power density for recording each pixel is increased in response to the square of the number N.

2. The image recorder according to claim 1, satisfying the following inequality:

$La \leqq Lb \leqq (N \times La)$

where La represents the size of a beam spot, formed by each second light beam on said recording medium, in said subscanning direction, and

Lb represents the size of said beam spot in said main scanning direction.

3. The image recorder according to claim 1, further comprising:

a numerical value changing element for changing the number N in response to light intensity required for image recording, and

a magnification changing element for changing a magnification of said focusing optical system in response to the number N changed by said numerical value changing element.

4. The image recorder according to claim 1, wherein

said spatial light modulator is a light valve with no discernible boundaries between adjacent modulating elements.

5. The image recorder according to claim 4, wherein

said light valve is the Grating Light Valve™.

6. An image recorder optically scanning an image recording medium in a main scanning direction and a subscanning direction for recording an image on said image recording medium, comprising:

a light source emitting a plurality of modulated light beams from a plurality of light emitting devices arranged in said subscanning direction;

a focusing optical system focusing said plurality of light beams on a recording medium; and

a main scanning system for scanning said recording medium with said plurality of light beams in said main scanning direction, wherein

said plurality of light beams constitute a plurality of beam subsets,

each beam subset consists of N adjacent light beams in said subscanning direction, where the number N is an integer of at least two, and

said plurality of light beams belonging to each said beam subset are synchronously modulated by a single image signal for a single pixel so that each pixel on said recording medium is recorded by a single beam subset,

whereby power density for recording each pixel is increased in response to the square of the number N.

7. The image recorder according to claim 5, satisfying the following inequality:

$La \leqq Lb \leqq (N \times La)$

where La represents the size of a beam spot, formed by each light beam on said recording medium, in said subscanning direction, and

Lb represents the size of said beam spot in said main scanning direction.

8. The image recorder according to claim 6, further comprising:

a numerical value changing element for changing the number N in response to light intensity required for image recording, and

a magnification changing element for changing a magnification of said focusing optical system in response to the number N changed by said numerical value changing element.

9. An image recorder for recording an image on an image recording medium, comprising:

a photo-generator generating a beam subset composed of a plurality of light beams subjected to a samc modulation;

a focusing optical system focusing said beam subset on said image recording medium; and

a scanning mechanism scanning said image recording medium with said light beam set, wherein

said beam subset consists of said adjacent light beams, whereby said beam subset is used to image a single pixel on said image recording medium.

Fig. A